KOKURIN, A.D., ROZENTAL' D.A.

Reaction of carbon dioxide and carbon monoxide with the carbon of the fuel. Trudy LTI no.51:52-57 '59. (MIRA 13:8)
(Carbon dioxide) (Carbon monoxide) (Carbon)

KOKURIN, A.D.

Chemical nature of the organic matter in Baltic shale. Trudy LTI no.51:58-64 '59. (MIRA 13:8)
(Oil shales--Analysis)

KOKURIN, A.D., SEMENOVA, N.T.

Investigating the acid products of shale oil. Trudy LTI no.51:65-71 '59. (MIRA 13:8)
(Oil shales--Analysis)

KOKURIN, A.D., GALUTKINA, K.A.

Effect of various admixtures on the yield of acid products in the thermal decomposition of oil shale. Trudy LTI no.51:72-75 '59. (MIRA 13:8)

(Oil shales) (Kerogens)

KOKURIN, A.D.; SETKINA, O.N., GRUZDEVA, V.V.

Decomposition of organic matter in an electric arc discharge.
Trudy LTI no.51:102-112 '59. (MIRA 13:8)
(Hydrocarbons) (Electric arc)

KOKURIN, A.D.; CHUZDEVA, V.V.

Study of the process of decomposition in an electric discharge.
Trudy LTI no.51:113-117 '59. (MIRA 13:8)
(Electric discharges through gases)

KOKURIN, A.D.; BAL'YAN, Kh.B., nauchnyy red.; VOROB'YEV, G.S., red.izd-va; GURDZHIYEVA, A.M., tekhn.red.

[Role played by chemistry in technological progress] Rol' khimii v tekhnicheskom progresse. Leningrad, Ob-vo po raspr. polit. i nauchn.znanii RSFSR, Leningr.otd-nie, 1961. 52 p.

(MIRA 14:6)

(Chemistry, Technical)

KOKURIN, A.D.; ROZENTAL', D.A.

Effect of adsorption on the combustion and gasification of fuel carbon. Trudy VNIIT no.10:109-120 '61. (MIRA 15:3)
(Adsorption)(Coal gasification)(Carbon oxides)

KOKURIN, A.D.; ROZENTAL', D.A.

Effect of the height of the fuel bed on the reduction reactions of carbon dioxide. Trudy VNIIT no.10:121-127 '61. (MIRA 15:3)
(Carbon dioxide)(Carbon monoxide)(Fuel)

FEOFILOV, Ye.Ye.; KOKURIN, A.D.; GARNOVSKAYA, G.N. [deceased]; VASIL'YEV, M.L.

Sulfonation of phenols of the middle cut of shale tar. Khim. i tekh. gor. slan. i prod. ikh perer. no.8:210-218 '60. (MIRA 15:2)

(Phenols)
(Oil shales)
(Sulfonation)

S/672/62/000/011/004/011
D403/D307

AUTHORS: Kokurin, A. D. and Obrezkov, V. D.

TITLE: Study of the mechanism of the process of electrocracking of liquid products

SOURCE: Leningrad. Vsesoyuznyy nauchno-issledovatel'skiy institut pererabotki i ispol'zovaniya topliva. Trudy. no. 11, 1962. Khimiya i tekhnologiya topliva i produktov pererabotki, 101 - 106

TEXT: A brief account is first given of the difficulties of the study of electrocracking of various liquid products in multiple arcs, concluding that little is as yet known of the processes taking place. The present study was concluded with simple liquid materials of known composition. Compositions of gases obtained from the cracking of benzene with various size fractions of powder movable electrodes (chiefly acetylene (33-37%) and hydrogen (61-66%)), and of gases obtained from toluene and xylene, are tabulated. The alkylbenzenes gave slightly higher contents of C_2H_2, C_2H_4,

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S/672/62/000/011/005/011
D403/D307

AUTHORS: Kokurin, A. D. and Obrezkov, V. D.

TITLE: The effect of certain factors on the electrocracking in microdischarges

SOURCE: Leningrad. Vsesoyuznyy nauchno-issledovatel'skiy institut pererabotki i ispol'zovaniya topliva. Trudy. no. 11, 1962. Khimiya i tekhnologiya topliva i produktov yego pererabotki, 107-119

TEXT: The object of the present study was to provide guidance for the design of industrial microdischarge electrocracking installations. The work was carried out on laboratory scale. The factors considered were: (1) Construction of apparatus; rectangular reactors are preferable to cylindrical ones. Various reactors are illustrated and compared. The effects of mechanical stirring or shaking of the carbon filling (movable electrodes) are discussed. (2) The effects of the amount and size fraction of the carbon filling on the effectiveness of the process and on the composition of the

Card 1/3

resulting gas. In the cracking of kerosene finer filling led to decreased yields of C_2H_2 and increased C_2H_4, C_3H_6 and C_4H_8. (3) The effects of interelectrode distance (l) and of circulation of the liquid material on effectiveness of the process; the productivity (l/hr) fell sharply with increasing l, and was slightly higher with circulation. (4) The effect of elemental and group composition of the starting material on the products. The percentage content of C_2H_2 in the gas m is given by

$$m = \frac{0.5(n - x)(100 - K)}{n + y}$$

where n is the number of C atoms in the molecule, K is the vol.% of C forming soot, and x, y are constants depending on the type of the starting material (for paraffins x = 0, y = 1; for naphthenes x = y = 0; for aldehydes and ketones x = 1, y = 2; for monatomic [Abstracter's note: C_1?] alcohols x = 1, y = 2; for diatomic alcohols x = 2, y = 3; for triatomic alcohols x = 3, y = 4). Adjust-

The effect of certain ...

ment of gas composition is discussed. (5) The effect of pressure on gas composition: reduced pressure increases and increased pressure (8 - 20 atm) decreases the yields of acetylene in the cracking of kerosene. The method of electrocracking in multiple voltage arcs is thought to be highly promising. There are 11 figures and 1 table.

Card 3/3

KOKURIN, A.D.; OBREZKOV, V.D.

Production of acetylene from gaseous and liquid hydrocarbons and tars. Trudy IGI 16:109-113 '61. (MIRA 16:7)
(Acetylene) (Hydrocarbons)

KOKURIN, A.D.; ROZENTAL', D.A.; YEVDOKIMOV, Yu.P.

Investigating the interaction of oxygen, carbon monoxide and carbon dioxide with charcoal under static conditions. Trudy LTI no.59:101-106 '61. (MIRA 17:9)

KOKURIN, A.D.; ROZENTAL, D.A.; SUSLINA, V.P.; TISHINA, N.I.

Investigating the interaction of carbon dioxide with fuel carbon under dynamic conditions. Trudy LTI no.59:107-112 '61.
(MIRA 17:9)

KOKURIN, A. D.; OBREZKOV, V. D.

Studying the mechanism of the electrocracking of liquid products. Trudy VNIIT no. 11:101-106 '62.

Effect of certain factors on electrocracking in micro-discharges. Ibid.:107-119. (MIRA 17:5)

KOKURIN, A.D.; OBREZKOV, V.D.

Mechanism of the process of electrocracking of liquid products.
Zhur.prikl.khim. 35 no.2:458-461 F '62. (MIRA 15:2)
(Cracking process)

KOKURIN, A.D.; OBREZKOV, V.D.

Effect of elementary composition of raw materials on the formation of carbon black in the process of electrocracking in microarcs. Zhur.prikl.khim. 35 no.11:2574-2577 N '62. (MIRA 15:12)
(Carbon black) (Cracking process)

KOKURIN, A.D.; OBREZKOV, V.D.; SIBAROV, D.A.

Electrocracking of sulfur-bearing oil distillates for the purpose of obtaining acetylene, olefins, hydrogen, carbon black, and sulfur-containing products. Zhur.prikl.khim. 36 no.2:424-428 F '63.
(MIRA 16:3)

(Cracking process) (Petroleum products)

KOKURIN, A.D.; OBREZKOV, V.D.; ANDREYEV, N.S.

Preparation of vinyl acetate from diluted acetylene. Zhur. prikl. khim. 36 no.4:886-889 Ap '63. (MIRA 16:7)

(Vinyl acetate) (Acetylene)

KOKURIN, A.D.

Problem of the formation of acetylene and carbon black. Zhur. prikl. khim. 36 no.8:1784-1793 Ag '63. (MIRA 16:11)

ACC NR: AP6025613 (A) SOURCE CODE: UR/0413/66/000/013/0053/0053

INVENTOR: Sibarov, D. A.; Kokurin, A. D.; Krzhechkovskiy, G. N.

ORG: None

TITLE: A device for studying electric discharges in liquids. Class 23, No. 183312

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 13, 1966, 53

TOPIC TAGS: electric discharge, electrode

ABSTRACT: This Author's Certificate introduces a device for studying electric discharges between stationary and movable electrodes in liquids. Isolated electric discharges are produced by mounting the stationary electrode on the bottom of the vessel for the liquid with the movable electrode suspended above it on a flexible lead.

SUB CODE: 09, 20/ SUBM DATE: 17May65

Card 1/1 UDC: 66,092,193,05

POLOZOV, V.F.; ZAPEVALOV, N.V.; SOTNIKOV, M.A.; KOLODIN, E.A.; KOKURIN, A.D.

Breaking down kerosine in momentary intermittent electric arcs.

L 56533-65
ACCESSION NR: AP5016790 UR/0286/65/000/010/0138/0138
66.097.3 : 691.4

AUTHOR: Dobryanskiy, A. F.; Kokurin, A. D.; Reshetov, Ya. I.

TITLE: A method for producing active clay. Class 2, No. 93513

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 10, 1965, 138

TOPIC TAGS: active medium, clay, acid catalyst

ABSTRACT: This Author's Certificate introduces a method for producing active clay by acid treatment. The clay is first heated to 100-200°C at a pressure of 10-17 atmospheres in water with the addition of catalysts, e.g. mineral acid salts and then treated in acid.

ASSOCIATION: none

SUBMITTED: 16Dec50 ENCL: 00 SUB CODE: ES, GC

NO REF SOV: 000 OTHER: 000

Card 1/1

NIKITIN, Ye. A.; KOKURIN, A. S.

Acids, Inorganic

Structure of heteropolyacids, Izv. Sekt. plat. i blag. met., No. 25, 1950.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

KOKURIN, I.

SUBJECT: USSR/Schooling 27-8-8/32

AUTHOR: Kokurin, I.

TITLE: Systematic Repair of Equipment (Planovost' v remonte oborudovaniya)

PERIODICAL: Professional'no - Tekhnicheskoye Obrazovaniye, Aug 1957, #8, p 14 (USSR)

ABSTRACT: Until 1956, insufficient attention was paid in Tula to the preventive maintenance of trade school equipment. This condition improved after the Chief Administration of Labor Reserves, on 21 April 1956, issued an order concerning the organization of systematic preventive maintenance. As a result, 21 schools which lacked the necessary equipment have established at the Special Trade School # 30 a community, well-equipped machine shop to take care of the required maintenance work. The other city trade schools are mechanically well equipped to care for their own needs. Further improvement, however, is still required.

INSTITUTION: Tul'skoye Oblastnoye Upravleniye Trudovykh Rezervov (The Tula Provincial Administration of Labor Reserves).

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress

Card 1/1

6(4);28(1)

PHASE I BOOK EXPLOITATION SOV/3296

Kokurin, Ivan Ivanovich, and Naum Samoylovich Faynberg

Avtomatizatsiya upravleniya radiouzlami (Automation of Rediffusion Stations) Moscow, Svyaz'izdat, 1958. 53 p. (Series: Opyt peredovykh svyazistov) 9,500 copies printed.

Resp. Ed.: I. P. Bushin; Ed.: L. I. Vengrenyuk; Tech. Ed.: K. G. Markoch.

PURPOSE: The booklet is intended for specialists in rediffusion broadcasting.

COVERAGE: The authors, both specialists in the automation of repeater stations in rediffusion broadcasting, describe in detail the methods used in converting amplifying systems to remote-controlled operation in the town of Gor'kiy. They describe experience gained in operating the equipment, in checking its performance and in telemetering and remote monitoring of conditions in transmission lines. They also list the advantages in economy resulting from the automation of rediffusion stations and substations. The authors conclude that experience gained in the automation of the broadcasting network in the town of Gor'kiy can be used in other cities. The following persons participated

Card 1/4

KOKURIN, I.M., aspirant

Problem concerning the operation of single-rail networks. Avtom., telem.i sviaz' 6 no.2:18-20 F '62. (MIRA 15:3)

1. Leningradskiy institut inzhenerov zheleznodorozhnogo transporta.
(Electric railroads--Signaling)

KOKIN, I.M., inzh.

Electrochemical nature of the ballast resistance of a.c. track circuits. Sbor. trud. LIIZhT no.223:3-25 '64. (MIRA 18:9)

KOKURIN, O., insh.

The ATM-4 unit. Zhil.-kom.khoz.7 no.11:12-14 '57. (MIRA 10:12)
(Remote control)

KOKURIN, O.

KOKURIN, O., inshener.

The distant measuring of pressure in municipal gas systems.
Zhil.-kom.khoz. 7 no.7:15-17 '57. (MIRA 10:10)
(Gas governors)

KOKURIN, Oleg Mikhaylovich; ALTUF'YEVA, A.M., red.izd-va; VOLKOV, S.V., tekhn.red.

[Remote control in urban gas-supply systems] Telemekhanizatsiia v gorodskikh sistemakh gazosnabzheniia. Moskva, Izd-vo M-va kommun.khoz.RSFSR, 1959. 151 p. (MIRA 13:1)
(Gas distribution) (Remote control)

BERSENEV, Ivan Sergeyevich; KOKURIN, O.M., red.

[Automatic and remote control in supplying gas to cities] Avtomatika i telemekhanika v gazosnabzhenii gorodov. Moskva, Stroiizdat, 1964. 170 p. (MIRA 18:3)

KOKURIN, V.

Some problems of planning and designing. Obshchestv.pit. no.8:36-39 Ag '59. (MIRA 12:12)

1. Upravlyayushchiy Moskovskim filialom Giprotorga.
(Restaurants, lunchrooms, etc.)

KOKURIN, V.

New pickling and packaging shops. Sov. torg. 35 no.5:59-61 My '62. (MIRA 15:5)
(Canning industry)

KOKURIN, V.; LYAKHOV, L.

"Moscow" department store". Sov. torg. 35 no.8:51-56 Ag '62. (MIRA 15:8)

(Moscow--Department stores)

KOKURIN, V.

Standard design for a school store. Sov. torg. 36 no.1:53-55 Ja '63. (MIRA 16:2)
(Stores, Retail)

KOKURIN, V.; FILLER, Yu., arkhitektor

Glass, ceramics, plastics. Obshchestv.pit. no.2:53-54 F '63.
(MIRA 16:4)

1. Direktor Gosudarstvennogo instituta po proyektirovaniyu predpriyatiy torgovli i obshchestvennogo pitaniya (for Kikurin).
(Restaurants, lunchrooms, etc.—Design and construction)

KOKURIN, Vyacheslav Aleksandrovich; SOFRONOV, V., gornyy inzh., retsenzent; SMIRNOV, A.A., gornyy inzh., retsenzent; KOLOMIYTSEV, A.D., gorn. inzh., otv. red.; LYUBIMOV, N.G., red.izd-va; IL'INSKAYA, G.M., tekhn. red.; LOMILINA, L.N., tekhn. red.

[Assistant engineer of electric locomotives in open-cut mines] Pomoshchnik mashinista elektrovoza na kar'erakh. Moskva, Gosgortekhizdat, 1963. 282 p. (MIRA 16:12)

1. Nachal'nik vnutrikar'yernogo transporta tresta "Korkinugol'" (for Sofronov).

(Mine railroads) (Electric locomotives)

KOKURIN, V.V.

Development of the textile industry in Latvia. Tekst.prom. 14 no.11:4-6 N '54. (MLRA 8:1)

1. Zamestitel' ministra promyshlennykh tovarov shirokogo potrebleniya Latviyskoy SSR.
(Latvia--Textile industry)

L 39484-66 EWT(d)/EWP(1) IJP(c) GG/BB/GD/GS

ACC NR: AT6002989 SOURCE CODE: UR/0000/65/000/000/0213/0219

AUTHOR: Kokurin, V. A.

ORG: none

TITLE: Frequency-to-binary-and-decimal-number converter

SOURCE: Vsesoyuznoye soveshchaniye po magnitnym elementam avtomatiki i vychislitel'noy tekhniki, 9th, Yerevan, 1963. Magnitnyye tsifrovyye elementy (Magnetic digital elements): doklady soveshchaniya. Moscow, Izd-vo Nauka, 1965, 213-219

TOPIC TAGS: transducer, converter, frequency converter, frequency code converter, frequency meter

ABSTRACT: A frequency-to-number converter designed on the electronic-counter principle is intended for delivering (decimal) information to a numerical display and (binary) information to a digital computer. A signal $f = f_r \pm f_m$ is applied to the converter, where f_r is the reference-generator frequency (1 kc) and f_m is the measurand (500 cps—5 kc). The converter operates with averaging times of 256, 128,

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KOKORIN, K.V.; KOKURIN, V.V.; MEDVEDEV, V.I.

Ways to achieve a further upswing of the textile industry. Tekst. prom. 22 no.8:5-8 Ag '62. (MIRA 15:8)

1. Zamestitel' predsedatelya Ivanovskogo soveta narodnogo khozyaystva (for Kokorin). 2. Nachal'nik proizvodstvenno-tekhnicheskogo otdela Ivanovskogo soveta narodnogo khozyaystva (for Kokurin). 3. Zamestitel' nachal'nika TSentral'nogo byuro tekhnicheskoy informatsii Ivanovskogo soveta narodnogo khozyaystva (for Medvedev).
(Textile industry)

KOKURIN, V.V.; MEDVEDEV, V.I.

Patriotic initiative of assistant foreman M.V.Kulikova in operation. Tekst.prom. no.2:1-3 F '63. (MIRA 16:4)

1. Nachal'nik proizvodstvenno-tekhnicheskogo otdela Ivanovskogo soveta narodnogo khozyaystva (for Kokurin). 2. Zamestitel' nachal'nika TSentral'nogo byuro tekhnicheskoy informatsii Ivanovskogo soveta narodnogo khozyaystva (for Medvedev).

(Textile industry) (Efficiency, Industrial)

KOKURIN, YU. G.

Masses of cosmic-ray particles. S. A. Azimov, N. Bir-zer, N. Dobrolin, G. Zhdanov, Yu. Kokurin, and R. Tayn-tinskii. Doklady Akad. Nauk S.S.S.R. ... (19..)

New expts. to det. the nature and mass of cosmic pa... were carried out at an altitude of 3800 m. by using 2 ... cameras in a magnetic field and with a ...scope. The data show that if particles having masses between those of the π meson and the proton and having a life ... 10 ... exist in cosmic rays at altitude of 3.4 km. then the no. cannot exceed 10% of the no. of protons remaining ... the same filters (30–105 g./sq. cm. Pb). J. R. ...

KOKURIN, Yu. L.

KOKURIN, Yu. L. - "Problems of the Composition of Cosmic Radiation." Sub 24 Nov 52, Physics Inst imeni P. N. Lebedev. (Dissertation for the Degree of Candidate in Physicomathematical Sciences).

SO: Vechernaya Moskva January-December 1952

WILSON, John Graham, 1911; KOKURIN, Yu.L.[translator]; BARADZEY, L.T. [translator]; LARSKIY, L.G., Khudozhnik; CHERKNKOV, P.A., redaktor; GERASIMOVA, E.S., tekhnicheskiy redaktor.

[The principles of cloud-chamber tekhnique; translated from the English] Kamera Vil'sona. Perevod s angliiskogo IU.L.Kokurina i L.T. Baradzei. Moskva, Izd-vo inostrannoi lit-ry, 1954. 151 p. (Cloud chamber) (MIRA 7:8)

KOHURIN, Y. L.

KOHURIN, J.L., and VITKEVICH, V.V.

"Research on the Irregular Structure of the Ionosphere by means of Radio-astronomical Methods,"

paper presented at 12th General Assembly of the International Scientific Radio Union [URSI] at Boulder, Colorado, 22 Aug - 5 Sept 57

KOKURIN, Yu. L.

AUTHOR: VITKEVICH, V.V., KOKURIN, YU.L.

TITLE: Radiowave Refraction Irregularities and Considerable Discontinuities in the Ionosphere. (Neregulyarnosti refraktsii radiovoln i bol'shiye neodnorodnosti v ionosfere, Russian)

PERIODICAL: Radiotekhnika i Elektronika, 1957, Vol 2, Nr 7, pp 826-832 (U.S.S.R.)

109-7-2/17

ABSTRACT: The measuring method and the results obtained by the investigation of the vertical refraction of radio waves by cosmic sources in zenith angles of $z \simeq 90 - 70°$, at a wave length of 4 m is described. It is shown that vertical refraction is frequently subject to irregular modifications and that irregular refraction is a result of the occurrence of electron heterogeneities with horizontal measurements of the order of 200 km in a height of $\sim$ 350 km (F-layer). At such a distance the optical layer thickness can change by 15-20%.
Several models of the heterogeneous ionosphere are investigated. The daily development of the heterogeneities is analyzed, and it is shown that the occurrence of heterogeneities in the ionosphere is connected with sun activity. (With 7 Illustrations, 1 Table and 1 Slavic Reference).

Card 1/2

109-7-2/17
Radiowave Refraction Irregularities and Considerable Discontinuities in the Ionosphere.

ASSOCIATION: Physical Institute "P.N.LEBEDEV" of the Academy of Science of the U.S.S.R. (Fizicheskiy Institut im. P.N.Lebedeva AN SSSR)

PRESENTED BY:
SUBMITTED: 16.1.1957
AVAILABLE: Library of Congress

Card 2/2

SOV/109-3-11-4/13

AUTHORS: Vitkevich, V.V. and Kokurin, Yu.L.

TITLE: Measurement of the Phase and Amplitude Fluctuations of the Radio Waves Which Passed Through the Ionosphere (Izmereniye fazovykh i amplitudnykh fluktuatsiy radiovoln, proshedshikh skvoz' ionosferu)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3, Nr 11, pp 1373 - 1378 (USSR)

ABSTRACT: For the purpose of this investigation, the ionosphere can be regarded as a screen which produces a certain amount of phase and amplitude modulation. It is therefore possible, by studying the modulation at a distance from the screen, to investigate the behaviour and the structure of the screen itself. This can be done provided the following conditions are fulfilled:
1) The length of the incident wave should be considerably smaller than the dimensions of the screen discontinuities (at metre waves this condition is always met);
2) The depth of the phase modulation produced by the screen should be less than 1 radian.
The problem can be studied by employing a double interferometer such as shown in Figure 1. This consists of two similar antennae, spaced at a distance b .

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Inst. Physics im Lebedev AS USSR

Measurement of the Phase and Amplitude Fluctuations of the Radio Waves which Passed Through the Ionosphere

If a plane wave impinges on the antennae at an angle α, the voltage at the input of the receiver Πp-1 (Figure 1) is given by Eq (1), where λ is the wavelength, l_1 and l_2 are the electrical lengths of the cables between the antennae and the receiver, while b is the base of the interferometer. The voltage at the output of the detector is proportional to the power at the input, as expressed by Eq (2). If the incidence angle α is varied, the output voltage of the receiver will describe an interference pattern, which can be expressed by Eq (3). If the signal from the antenna system is applied to two receivers which are connected in such a way that the difference in the electrical lengths of their feeder cables is Δl, the output voltages of the receiver are given by:

Measurement of the Phase and Amplitude Fluctuations of the Radio Waves which Passed Through the Ionosphere

$$\left.\begin{aligned} A_1 &= \frac{1}{2}\left[1 - \cos 2\pi x\right], \\ A_2 &= \frac{1}{2}\left[1 - \cos 2\pi (x - x_1)\right] \end{aligned}\right\} \qquad (4).$$

If at the instant corresponding to a phase x_o the intensity of the signal changes a certain amount, the increments of the receiver output voltages at the points x_o are given by Eqs (5), where a is the relative change in the signal strength. If both amplitude and phase fluctuations of the signal are present, the increments of the output voltages can be expressed by Eqs (7). It is possible to solve Eqs (7) with respect to a and Δx. From Eq (7), it can be seen that the most advantageous arrangement of the interferometer is such in which the phases of the two output voltages differ by π. The above interferometer technique was employed to carry out some

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Measurement of the Phase and Amplitude Fluctuations of the Radio Waves Which Passed Through the Ionosphere

measurements. The experimental equipment employed two in-phase antennae operating a wavelength of $\lambda = 3.5$ m; the antennae had an area of 59 m^2 and a beam width of 16^0 in the horizontal plane and 50^0 in the meridian plane. The distance between the antennae was 162.2 m so that the width of the main lobe of the directional pattern was 74'. The antennae were directed towards the radio stars Swan-A and Cassiopea. The receivers were the normal superheterodynes operating at a frequency of 86 Mc/s. The intermediate frequency of each receiver was 9 Mc/s, the overall bandwidth was 0.2 Mc/s and the time constant of the output device was 7 - 9 sec. The results of some preliminary measurements are shown in Figure 2. The continuous curves in the figure correspond to the signal of the source in the absence of fluctuations, while the remaining curves illustrate the fluctuation effects. The curves can be used to determine the amplitude increments ΔA_1 and ΔA_2 by the direct measurement of the peaks

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in the figure. The values of Δx and a could be evaluated from Eqs (7). The distribution of the quantities $\Delta\alpha$ and a are shown in Figures 3 and 4, from which it follows that the average value of a is 0.2 and the average value of $\Delta\alpha$ is 1.6'. The distribution curve of the duration of the fluctuations is given in Figure 5, from which it is seen that the most probable value of the duration is 30 sec. The above values can be used to determine the average phase gradient of the diffracting layer and this has a value of 85×10^{-5} radians m^{-1}. Also it is found that the average gradient of the electron density in the ionosphere is 85×10^{4} cm^{-2} m^{-1}.

There are 5 figures and 8 references, 6 of which are English and 2 Soviet.

AUTHORS: Vitkevich, V. V. and Kokurin, Yu. L.

TITLE: Investigation of the Winds and Non-Uniformities in the Ionosphere by Radio-Astronomical Methods (Issledovaniye vetrov i neodnorodnostey v ionosfere radioastronomicheskim metodom)

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 1, pp 17-20 (USSR)

ABSTRACT: The investigations described were carried out by means of an equipment consisting of 3 antennas and 3 receivers (see Fig.1). The antennas were identical and, in the meridian plane, they had an inclination angle of $\delta = 49.5^{\circ}$. Each antenna was in the form of a paraboloidal reflector with a square aperture having an area of 170 m^2. The width of the directional pattern of the antenna was 21° and the focal distance of the paraboloid was 6.7 m. A half-wave dipole was situated in the focus of each reflector and at a distance of 0.2 λ from it was situated a half-wave reflecting dipole. The 3 receivers were situated in the same place. Each receiver comprised a 2-stage high-frequency amplifier, a heterodyne, a mixer, a 4-stage intermediate-frequency amplifier, a detector, a 2-stage DC push-pull amplifier and a registering device. The intermediate frequency was 10 Mc/s and the bandwidth of the receiver was 0.4 Mc/s. The anode and heater

Investigation of the Winds and Non-Uniformities in the Ionosphere by Radio-Astronomical Methods

supplies of the receivers were stabilised. The equipment was used to carry cut the measurements on the radio stars in the constellations of Cygnus and Cassiopeia. The measurements were done at a wavelength of 6 m during December 1954 and April 1955. The recordings obtained were in the form shown in Fig.2. From such recordings it was possible to determine the magnitude and the direction of the wind velocity in the ionosphere; the velocity v and the direction β' could be evaluated from Eqs.(1), where the meaning of various symbols should be clear by referring to Fig.1. For the West-East velocity component, it was necessary to determine a correction and this was found to be of the order of 20 m/s. The results of the measurements can be summarised as follows: during 13 minutes on 9.12.54 it was found that the velocity was 70 m/s and $\beta = 250^{\circ}$; later, the velocity increased rapidly to 90 m/s and β was about 40° for a duration of 6 min; on the 19.12.54 the velocity was 90 m/s and $\beta = 280^{\circ}$; these values

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were constant during 13 minutes; on the 2.4.55 the velocity was 85 m/s and $\beta = 150^{o}$; the values were constant during 12 min. The recordings were also used to determine the dimensions of the diffraction spots and it was found that for the direction A_1A_2 the spots had lengths of 1200, 2500 and 2000 m for the above 3 cases, respectively. The paper was read at the Colloquium of the Oscillation Laboratory of the Physics Institute of the Soviet Academy of Sciences on the 8th February, 1956. The paper contains 2 figures and 10 English references.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva, AN SSSR (Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR)

SUBMITTED: May 18, 1957.

89774
S/169/61/000/002/028/039
A005/A001

9,9100 (also 1041, 1046)

Translation from: Referativnyy zhurnal, Geofizika, 1961, No. 2, pp. 42-43, # 2G298

AUTHOR: Kokurin, Yu. L.

TITLE: The Shape and Motion of Small Inhomogeneities in the Ionosphere

PERIODICAL: V sb.: "Dreyfy i neodnorodnosti v ionosfere", No. 1, Moscow, AN SSSR, 1959, pp. 60-71 (English summary)

TEXT: Results of the study of the inhomogeneous structure of the ionosphere are presented by the spaced reception method with a small base and the use of radiosignals from extraterrestrial sources (Signus A, Cassiopeia), λ = 6m. The observations were conducted at Simeiz (44° n. lat., 34° e.long.) from April 1955 to February 1956. The method is briefly described which was applied to the determination of the degree of anisotropy and the drift speed of inhomogeneities by using the correlation analysis. It is shown that the most probable degree of extension of inhomogeneities is $l \sim 1.6 - 1.8$, whereat the anisotropy of inhomogeneities in cases of $l < 5$ is not connected with the geomagnetic field, and in case of $l \geq 10$ the inhomogeneities are extended along the geomagnetic lines of

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A005/A001

The Shape and Motion of Small Inhomogeneities in the Ionosphere

force. The most probable dimension of the inhomogeneities studied is 1 km. No regular seasonal or diurnal variations of this value were observed. It is shown that the life time of inhomogeneities is determined not by diffusion but by another process, most probably by turbulence. Quantitative estimations of the diffusion coefficient and the life time of inhomogeneities are presented. The most probable value of the drift speed was determined to be V = 100 m/sec; no noticeable diurnal and seasonal variations were observed. The direction of drift changed within wide limits. By night chiefly southward directions could be recorded. The dependence of the state of the ionosphere on the hour of the day was studied. It is shown that the probability of the phenomenon of scintillations of radiostars is highest by night; consequently, the ionosphere is mostly disturbed at this time. In some cases transitions of the ionosphere were observed from the quiet state into the disturbed one, which is explained, in the author's opinion, by the existence of local inhomogeneities in the ionosphere, which represent the regions of decreased electron concentration. The author explains the disagreement of some results of the analysis presented with the data of other investigations by the difference between the latitudes of the observation stations

Card 2/3

NEYSHIL'D, V.G.; PANOVKIN, B.N., insh.; KOKURIN, Yu.L., kand.fiziko-matem. nauk, otv.red.; NOVICHKOVA, N.D., tekhn.red.

[Radio astronomy; annotated bibliographical index of Russian and foreign literature, 1932-1958] Radioastronomiia; annotirovannyi bibliograficheskii ukazatel' otechestvennoi i inostrannoi literatury 1932-1958 gg. Moskva, 1960. 215 p. (MIRA 13:7)

1. Akademiya nauk SSSR. Sektor seti spetsial'nykh bibliotek.
2. Glavnyy bibliograf Biblioteki Fizicheskogo instituta im. P.N.Lebedeva AN SSSR (for Neyshil'd).
(Bibliography--Radio astronomy)

S/109/61/006/005/006/027
D201/D303

9,9100

AUTHORS: Kokurin, Yu.L., Sukhanovskiy, A.N., and Alekseyev, Yu. I.

TITLE: Investigating of models of large-scale inhomogeneities in the ionosphere using the radioastronomical method

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 5, 1961, 738 - 746

TEXT: It has already been shown by V.V. Vitkevich, and Yu.L. Kokurin (Ref. 1: Radiotekhnika i elektronika 1957, 2, 7, 826) that the oscillations of the refraction of radiowaves propagated through the whole thickness of the ionosphere are conditioned by the presence in the ionosphere of inhomogeneities with horizontal dimensions of the order of hundreds of kilometers. Again Yu.L. Kokurin (Ref. 2: Radiotekhnika i elektronika 1959, 4, 12, 1985) approximated the evaluation of the dependence of the mean amplitude of oscillations of refraction $\overline{(R_n)_{max}}$ on the vertex angle z, , and it was

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shown that this dependence is essentially different for the two models of the layer. In the present article, the authors give the results of measuring the irregular refraction of the ionosphere for two angles simultaneously $z \approx 0 - 30^{\circ}$ and $z \approx 85^{\circ}$. The source of radiation were the sun spots, measurements were made using a vertical naval interferometer in the manner described in Ref. 1 (Op.cit.) The interferometer data were as follows: working frequency $f = 207$ Mc/s ($\lambda = 1.45$ m); antenna height over the sea level $H = 286.3$ m. The results are illustrated of recording the sunrise on December 29, 1958. Further detailed observations were made only during the sunsets, from which basic parameters of large ionosphere inhomogeneities were determined by measuring the periods and amplitudes of refraction oscillations. For each wave (period) of oscillations straight lines, tangential to $R_n^V(z)$ at two points were determined at the beginning and end of the n^{th} period as shown in Fig. 4. The distance between the two points was assumed to be equal to the period of oscillations or to the angular dimension of the inhomogeneity ΔZ, and half of the distance of the curve R^V as referred to the

tangent was taken as the amplitude of the oscillation of refraction $(R_n^v)_{max}$. Angular dimensions were then transposed into the linear dimension d under the assumption that the distribution of the inhomogeneity was at a height h_0 = 300 km (Ref. 1: Op.cit.). The value of d oscillation between 100 - 500 km with its most probable value $\bar{d} \simeq 200 - 220$ km. The amplitudes of oscillations of refraction $(R_n^v)_{max}$, averaged over every session of observation, lie basically within the limits 0.5 - 5.0' with the most probable value $\overline{(R_n^v)_{max}}$ = 2.5 - 3.0'. From the above data the parameters of the two models of inhomogeneities were evaluated as follows: Model 1. Assuming the linear dimensions $\bar{d} \simeq 200$ km its effective thickness $\mathcal{L}$ = 50 km and the refractive index n = 0.9983 (N = $1.8 \cdot 10^6$ cm^{-3}) the difference between the geometrical and optical thickness of the inhomogeneity is L ≃ 80 m. From Equation (6) obtained by Yu.L. Kokurin (Ref. 2: Radiotekhnika i Elektronika, 1959, 4, 12, 1985) the variations of

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this difference

$$L = \overline{(R_n^V)_{max}}\, d \frac{\left(1 - \frac{r_0}{r_0 + h_0}\sin z\right)^3}{2\pi} = 2{,}7 - 3{,}5\ \text{km} \qquad (1)$$

(radius of earth - r_0) from which $\frac{\Delta L}{L}$ = 3.3 - 4.4 %; thus if the irregularities in the refraction are due to the presence in the F layer of horizontal gradients, the horizontal changes (with an average period ~200 km) of the optical thickness of large inhomogeneities and of the total number of electrons in them are 3.3 - 4.4 %.

Model 2. For the same parameters of inhomogeneities for the wave model the following is obtained using Equation (10) from Yu.L. Kokurin (Ref. 2: Op.cit.).

$$\overline{\Delta h} = \frac{\overline{(R_n^V)_{max}}\, d^2 \left[1 - \left(\frac{r_0}{r_0 + h_0}\sin z\right)^2\right]^{1/2}}{L(2\pi)^2 \frac{r_0}{r_0 + h_0}\sin z} \approx 0{,}45 - 0{,}54\ \text{km} \qquad (2)$$

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D201/D303

Investigating of models ...

It follows that the observed oscillations in the refraction may be attributed to the wave structure of the ionosphere inhomogeneities with a period $\bar{d} \approx 200$ km and amplitude of the wave $\overline{\Delta h} \approx 0.5$ km. The observations of the irregular refraction near the vertex were carried out in the Crimea (44°N) using a horizontal interferometer consisting of two parabolic antennae spaced in an East-West direction by about D = 520 m; the effective beam width was about 15°. In order to determine the curves of the dependence of the irregular refraction R_n on time, the position of the antenna lobes were determined in time units with the origin as the instant of culmination of the source. Observations were made between December 12, 1958 and June 1, 1959 with four cosmic sources. Graphs are given for every session of observations for $R_n = f(t)$. The authors conclude that large-scale ionosphere inhomogeneities represent wave type formations (Model II) with an average horizontal scale (period) $\bar{d} \approx 200$ km and the amplitude of the wave $\Delta h > 0.5$ km. Only an insignificant thickness of the layer seems to have a wave structure. This thickness is $\leqslant 20\%$ of its total effective value. It would

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S/109/61/006/005/006/027
D207/D303

Investigating of models ...

appear as if this part of the inhomogeneity were distributed near the region of maximum electron concentration and has the geometrical thickness <50 km. There are 5 figures, 1 table and 14 references: 10 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: H. Hewish, Proc. Roy. Soc., 1952, 214A, 404; J.P. Wild, J.A. Roberts, J.Atmos and Terr. Physc. 1956, 8, 55; G.N. Munro, Proc. Roy. Soc., 1950, 202, 208; E.N. Bramley, Proc. Roy. Soc., 1953, 220, 39.

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva AN SSSR (Institute of Physics im. P.N. Lebedev AS SSSR)

SUBMITTED: June 4, 1960

Card 6/6

ACCESSION NR: AP4019968 S/0020/64/154/006/1303/1305

AUTHORS: Grasyuk, A.Z.; Zuyev, V.S.; Kokurin, Yu.L.; Kryukov, P.G.; Kurbasov, V.V.; Lobanov, V.F.; Mozhzherin, V.M.; Sukhanovskiy, A.N.; Cherny*kh, N.S.; Chuvayev, K.K.

TITLE: Optical moon ranging

SOURCE: AN SSSR. Doklady*, v. 154, no. 6, 1964, 1303-1305

TOPIC TAGS: laser, ruby laser, moon ranging, moon light reflection, celestial ranging, optical ranging

ABSTRACT: The paper describes the preliminary results of moon ranging with a ruby laser. For the transmission and reception of the light pulses, a telescope was used with a mirror diameter of 2.6 m. (see Fig. 1 of the Enclosure). The laser used was developed by V.S. Zuyev and P.M. Kryukov and had the following parameters: wavelength 6943Å, pulse energy 50 to 70 joules, pulse duration 2 μsec, diameter of the beam 11 mm., and divergence 3'. By taking into consideration the light scattering in the atmosphere, the diameter of the spot on the moon is estimated to be 14 km. For the detection of the signal,

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ACCESSION NR: AP4019968

a photomultiplier cooled with dry ice was used. The signal to noise ratio was 0.16. Therefore, statistical treatment was necessary. The authors believe that the results prove the reality of the reflected signal. "The authors are grateful to corresp. members A. G. Basov and A. B. Severny*y, and to B. I. Belov, F. Kh. Nigmatullin of the Lebedev Phys. Institute, and to V. B. Nikonov, V. K. Prokof'yev, P. P. Dobronravin, N. V. Stesheuko, and B. P. Abrazhevskiy of the Crimean Astrophysics Observatory." Orig. art. has: 1 figure.

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva Akademii nauk SSSR (Institute of Physics, AN SSSR), Kry*mskaya astrofizicheskaya observatoriya akademii nauk SSSR (Crimean Astrophysics Observatory, AN SSSR)

SUBMITTED: 05Nov63 ATD PRESS: 3047 ENCL: 01

SUB CODE: EC, AA NO REF SOV: 001 OTHER: 001

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ACCESSION NR: AP4019968

ENCLOSURE: 01

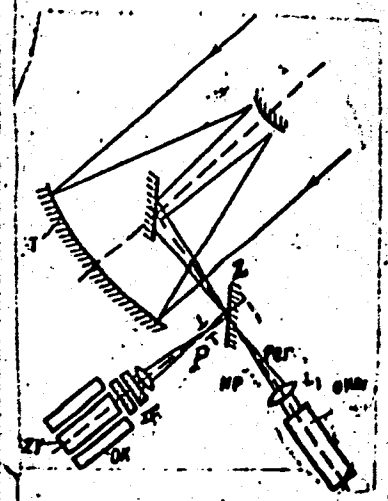

Fig. 1. Diagram of unit for optical moon ranging

T - Telescope; OKG - optical quantized generator; L_1 - matching lens; Z - throwover mirror; D - diaphragm; IF - interference filter; FZY - electron photomultiplier; OK - dry ice container.

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Pl-4 WS-4/GW/WR
ACCESSION NR: AT5012810 UR/2504/65/028/000/0129/0134

42
41
B+1

AUTHOR: Kokurin, Yu. L.; Sorochenko, R. L.

TITLE: 11. Radiotelescopes with spherical reflectors 15

SOURCE: AN SSSR. Fizicheskiy institut. Trudy, v. 28. 1965. Radioteleskopy (Radio telescopes), 129-134

TOPIC TAGS: radiotelescope reflector, spherical reflector, radiotelescope reemitter, radiotelescope field

ABSTRACT: The construction of large-scale, movable, radiotelescope antennas meets with severe technological difficulties. Consequently, it seemed promising to study radiotelescope systems consisting of a static spherical reflector and a small specially shaped reemitter placed within the focal region of the mirror (A. K. Head, Nature, 1957, 179, no. 4562). In this paper, submitted in November, 1960 to the enlarged plenary meeting of the Komissiya po radioastronomii (Commission on Radioastronomy), the authors investigate theoretically the shape of the reemitting surface of the spherical radiotelescope and its field of view and compare its properties with known alternative solutions. A spherical reflector can cover approximately 80% of the sources which can be observed by movable elements and the observation time is cut in half; the construction of the

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ACCESSION NR: AT5012810

spherical reflector is quite simple, they are easy to run, and since they are located below the earth's surface the secondary reflector almost completely screens the irradiator from the possible perturbing sources. The spherical radiotelescope should also have a very low antenna temperature noise. Orig. art. has: 12 formulas, 3 figures, and 1 table.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute of the Academy of Sciences, SSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: AA

NO REF SOV: 001 OTHER: 001

Card 2/2

KOKURIN, Yu.L.

Exploring large-scale ionospheric inhomogeneities by radio astronomical methods. Trudy Fiz. inst. 28:167-178 '65. (MIRA 18:7)

KOKURIN, Yu.L.; KOVURA, Yu.A.; SUKHANOVSKIY, A.N.

Method for measuring the north-south component of the refraction of microwaves in the ionosphere and the optical strata gradient. Radiotekh. i elektron. 10 no.5:939-940 My '65. (MIRA 18:5)

L 19355-66 EWT(1)/FCC/EWA(h) GW

ACCESSION NR: AT5012813 UR/2504/65/028/000/0167/0178

AUTHOR: Kokurin, Yu. L.

B+1

TITLE: 14. Studies of large-scale ionospheric inhomogeneities using radio astronomical methods

SOURCE: AN SSSR. Fizicheskiy institut. Trudy, v. 28, 1965. Radioteleskopy (Radio telescopes), 167-178

TOPIC TAGS: ionospheric inhomogeneity, ionospheric refraction, radio astronomy, electron concentration

ABSTRACT: Earlier investigators discovered (see, e.g., W. Rose, E.N. Bramley, Nature, 1949, 164, 355; E.N. Bramley, Proc. Roy. Soc., 1953, 220, 39) that the direction of radio waves from an extraterrestrial source toward an observation point on the earth is subjected to slow irregular changes. The magnitude of these angular oscillations is proportional to the square of the wavelength (B.M. Chikhachev, Radiotekhnika i elektronika, 1960, 5, 9, 1, 359), which supported the assumption that they are caused by irregular radiowave refraction on electron inhomogeneities within the Earth's ionosphere. The present paper gives a theoretical summary of observations

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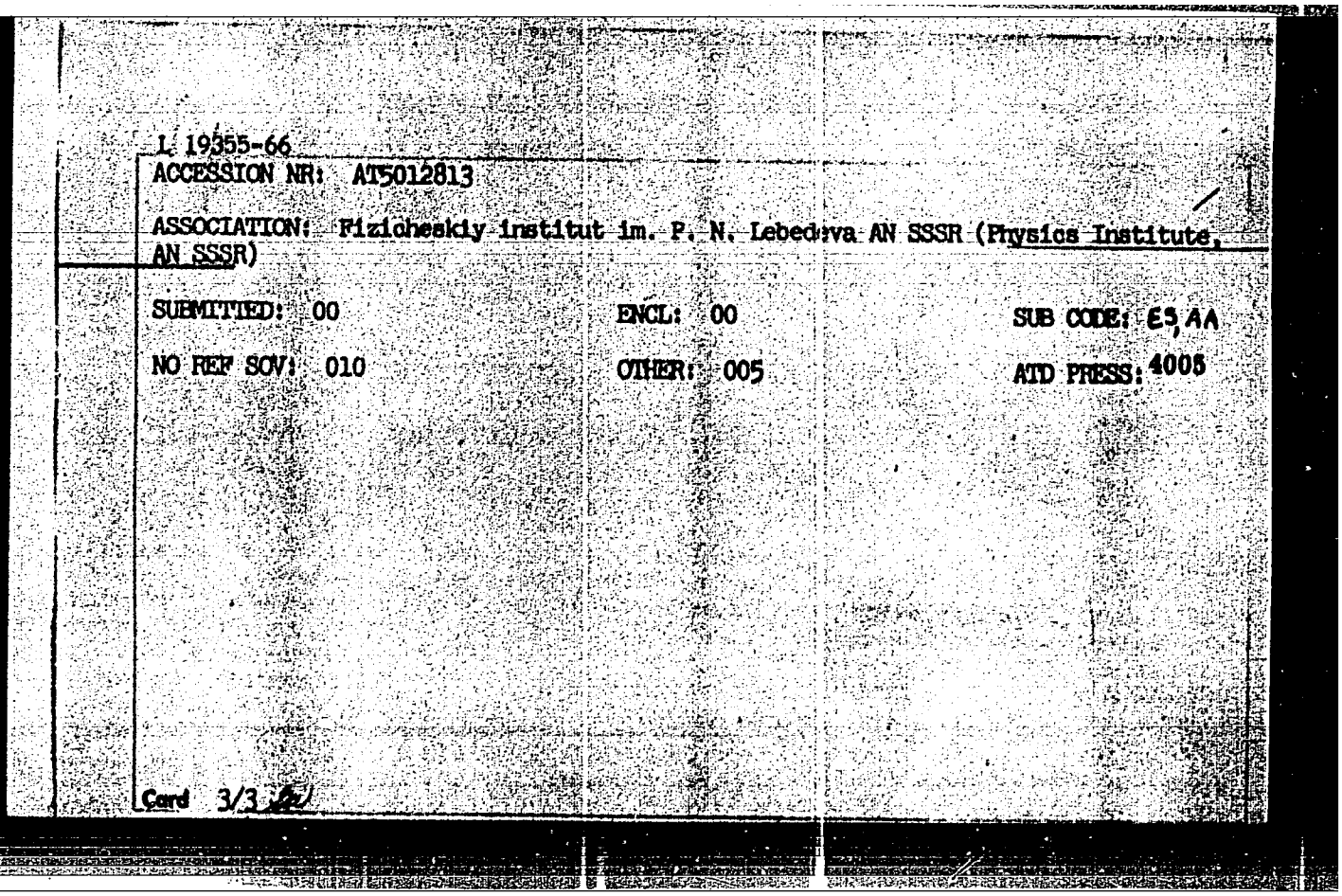
ACCESSION NR: AT5012813

carried out by the authors and other researchers over a fifteen-year period. It reports on 1) the measurement of the linear dimensions of the above-mentioned inhomogeneities and their altitude above the Earth's surface from the observation of the vertical ionospheric refraction near the horizon; 2) the dependence of the irregular ionospheric refraction on the zenith angle and its connection with the model of ionospheric inhomogeneities; 3) the study of the model of ionospheric inhomogeneities using simultaneous measurements of the irregular refraction near the horizon and zenith; 4) the comparison of data concerning the irregular refraction near the zenith and the horizon; and 5) the variations in the irregular refraction with time. The results show that the large-scale ionospheric inhomogeneities are wavelike occurrences with an average horizontal measure ("period") of approx 200 km and a mean amplitude > 0.5 km. The wavy portion represents only < 20% of the total thickness of the effective ionospheric layer. This portion is apparently near the region of maximum electron concentration and has a geometric thickness of < 50 km. These large-scale ionospheric inhomogeneities are observed basically during the morning hours (maximum frequency of occurrence is 1.5—2 hours after sunrise) which points to their connection with solar activity. Orig. art. has: 5 formulas, 8 figures, and 2 tables. [08]

Card 2/3



L 19355-66
ACCESSION NR: AT5012813

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 00 ENCL: 00 SUB CODE: ES, AA

NO REF SOV: 010 OTHER: 005 ATD PRESS: 4005

Card 3/3

L 22702-66 EWT(1)/T IJP(c) JXT(CWR)/CW

ACC NR: AP6010439 SOURCE CODE: UR/0386/66/003/005/0219/0223

AUTHOR: Kokurin, Yu. L.; Kurbasov, V. V.; Lobanov, V. F.; Moshsherin, V. M.; Sukhanovskiy, A. N.; Chernykh, N. S.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

47
B

TITLE: Measuring the distance to the moon by an optical method

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 5, 1966, 219-223

TOPIC TAGS: moon, moon earth distance, distance measurement, moon location, optical location, laser application

ABSTRACT: A description is given of the experimental measurement of the distance to the moon by means of an optical locator. A schematic of the locator is shown in Fig. 1. Ruby laser 1 and photomultiplier 2 are fixed rigidly in the Kude focus of telescope 3. A tunable interference filter 4 is placed in front of the photomultiplier and behind diaphragm 5. Mirror 6 can be automatically switched from receiving to transmitting operations. Photomultiplier output amplifier and pulse shaper 7 follow 2, and the measurement of the time intervals between the emission and reflection (from the moon) of laser pulses is made by

Card 1/4

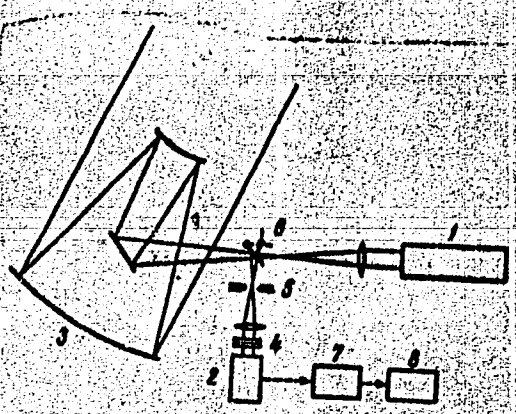


Fig. 1. Schematic of the locator

counter 8, which is activated by that portion of the laser pulse directed to the photomultiplier. The laser operated at 6943 Å, with a pulse energy and duration of 5—7 j and $5 \cdot 10^{-8}$ sec, respectively. The diameter of the main telescope mirror was 2.6 m and its focal length 104 m; the beam diameter was 13 mm, and the divergence of the beam reflected from the telescope mirror was ±3 sec of arc. The filter pass-band was 10 Å, and the instrumental error in the measurement of time $\pm 10^{-7}$ sec. The observation of the lunar surface was confined to an area located at the bottom of the Flammarion crater with the selenographic

L 22702-66

ACC NR: AP6010439

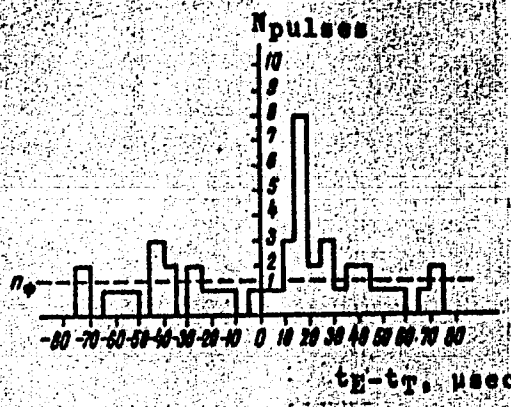


Fig. 2. Results of measurements

coordinates of λ—3°.57 and ϕ—2°.98. The results of observations are shown in Fig. 2, as a frequency distribution of the quantity $t_E—t_T$ in 10-μsec class intervals (t_E and t_T are the experimental and calculated times, respectively, required by a signal to complete the round trip). The signal-to-noise ratio was ~5 and the mean of the useful signal was found to be distributed within the 15—20 μsec class boundary, with a standard deviation of 1.2 x 10^{-6} [illegible]. The total error in positioning the distribution center was ±1.3 x 10^{-6} sec, which corre-

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L 22702-66

ACC NR: AP6010439

sponds to ~200 m error in the measurement of distance. Orig. art. has: 2 figures. [YK]

SUB CODE: 20/ SUBM DATE: 22Jan66/ ORIG REF: 002/ OTH REF: 001/

ATD PRESS: 4229

Card 1/1 BK

L 20602-66 EWT(d)/FSS-2/EWT(1)/EEC(k)-2/FCC/EWA(h) AST/RB/GW

ACC NR: AP6008279 SOURCE CODE: UR/0109/66/011/003/0439/0444

AUTHOR: Kokurin, Yu. L.; Kovura, Yu. A.

ORG: none

TITLE: Measuring irregular refraction of radio waves in the ionosphere by means of signals from artificial Earth satellites

SOURCE: Radiotekhnika i elektronika, v. 11, no. 3, 1966, 439-444

TOPIC TAGS: electromagnetic wave refraction, ionospheric refraction, artificial satellite

ABSTRACT: A theoretical method of isolation of the interference curve free from polarization fading is set forth; information about irregular refraction is obtained by determining the angular position of characteristic points on this curve. The experimental study included reception of a 30-Mc signal from a "Mayak" transmitter borne by the "Elektron-2" satellite; a horizontal half-wave dipole with a reflector and an R-250 superheterodyne receiver were used; the receiver passband was 4-5 kc. After detection, the signal was applied to a balanced d-c amplifier and recorded on

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L 20602-66
ACC NR: AP6008279

tape. The same equipment was used in an additional interferometer. The antenna height was 30 m above sea level; the antennas of both interferometers were so positioned that within azimuth angles of 100—250° the signal was reflected only by the sea surface; the distance between antennas was 2 km. The presence of irregular gradients of z-optical density disturbs the monotonous shape of a $\sum_{i=1}^{m} \theta_i(t)$ curve. An example of this curve plotted from data obtained on 17 Mar 64 is shown. Orig. art. has: 3 figures and 11 formulas. [03]

SUB CODE: 09, 17 / SUBM DATE: 20Oct64 / ORIG REF: 005/ ATD PRESS: 4225

Card 2/2

L 44777-66 EWT(1)/FCC GW/WS-2

ACC NR: AP6031034 SOURCE CODE: UR/0109/66/011/009/1687/1688

AUTHOR: Kovura, Yu. A.; Kokurin, Yu. L.; Ovsyankin, M. A.

ORG: Physics Institute im. P. N. Lebedev, AN SSSR (Fizicheskiy institut AN SSSR)

TITLE: Preliminary results in determining the anisometry of large ionospheric inhomogeneities by the radioastronomy method

SOURCE: Radiotekhnika i elektronika, v. 11, no. 9, 1966, 1687-1688

TOPIC TAGS: ionospheric wave propagation, ionospheric inhomogeneity, radio astronomy

ABSTRACT: To establish the anisometry of large ionospheric inhomogeneities, fluctuations in ionospheric refraction were determined by measuring a 47-Mc emission from the discrete source Cygnus-A within zenith angles of 45°—25°. The study was conducted in the Crimea in November—December 1964. The two interferometers used in the study were oriented at 81° and 204° (clockwise from the south). The error of measuring fluctuations in angles of arrival of the wave did not exceed 1'. A clearly defined anisotropy of incoming wave-angle fluctuations was determined from statistical processing of 19 signal records; the rms values were 5' and 1' for directions 81° and 204°, respectively. The relative dimensions of large ionospheric inhomogeneities and their azimuths were computed for lenticular and sinusoidal models of inhomogeneities. The dimension ratios of large ionospheric inhomogeneities for directions 206° and 84°

Card 1/2 UDC: 523.164:621.371

L 44777-66

ACC NR: AP6031034

(layer height, 350—1400 km) are 3.5 for the lenticular and 1.6 for the sinusoidal models. On the basis of these data, it was concluded that the elongation of the large inhomogeneity is closer to the meridian direction then to the latitudinal. Orig. art. has: 2 formulas. [GS]

SUB CODE: 08,03/ SUBM DATE: 24Jan66/ ORIG REF: 004/ ATD PRESS: 5079

Card 2/2 ULR

L 45569-66 EWT(1)/FCC GW

ACC NR: AP6031035 SOURCE CODE: UR/0109/66/011/009/1688/1688

AUTHOR: Kokurin, Yu. L.; Ovsyankin, M. A.

ORG: Physics Institute im. P. N. Lebedev, AN SSSR (Fizicheskiy Institut AN SSSR)

TITLE: Relating large ionospheric inhomogeneities to the sun according to radioastronomy data

SOURCE: Radiotekhnika i elektronika, v. 11, no. 9, 1966, 1688

TOPIC TAGS: ionospheric inhomogeneity, ionospheric propagation

ABSTRACT: To determine the dependence of irregular refraction on the zenith angle, the Crimean Scientific Station of the Physics Institute, Academy of Sciences USSR, conducted prolonged radioastronomic observations of two discrete sources, Virgo-A and Cygnus-A, at $\lambda = 6.38$ m in zenith-angle intervals $z = 78°—58°$ and $z = 62°—30°$. Measurements were made using an asymmetrical radio interferometer oriented in an East-West direction. The following results were obtained: 1) An East-West asymmetry of large ionospheric inhomogeneities was noted: fluctuations of radio wave refraction were observed in the Eastern part of the sky but were almost absent in the Western part. 2) An investigation of the dependence of irregular refraction amplitude on the time and the

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ACC NR: AP6031035

zenith angle ΔR_H (t, z) at various positions of the source in respect to the sun permits separation of angular variations ΔR_H (z) from diurnal variations ΔR_H (t). The diurnal variation data demonstrate that the refraction irregularities appear approximately one hour after the investigated region of the ionosphere is illuminated by the sun. Their amplitude approaches the maximum approximately four hours later and slowly decreases during the subsequent seven-hour period. 3) The irregular refraction amplitude ΔR_H (z) decreases with the decrease in zenith angle z. For z = 78° the corresponding value of ΔR_H is 13' to 15'; for z = 58° ΔR_H is 5' to 6'. 4) The quasiperiodic variation in irregular refraction amplitude ΔR_H was dependent upon the zenith angle. [GS]

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ACC NR: AP6019595 SOURCE CODE: UR/0293/66/004/003/0414/0426

AUTHOR: Kokurin, Yu. L.; Kurbasov, V. V.; Lobanov, V. F.; Moshzhorin, V. M.; Sukhanovskiy, A. N.; Chernykh, N. S.

ORG: none

TITLE: On the feasibility of measuring lunar disk and orbital parameters by optical radar

SOURCE: Kosmicheskiye issledovaniye, v. 4, no. 3, 1966, 414-426

TOPIC TAGS: lunar albedo, moon, laser application

ABSTRACT:

Yu. L. Kokurin and coworkers [1] have reviewed the theoretical problems in laser ranging of the moon, with the object of determining more accurate values for several Earth-Moon parameters. The authors discuss methods for 1) obtaining a more detectible reflection signal and 2) using the measured range to compute such parameters as mean lunar orbital radius, lunar disk radius, parallax constant, and Earth equatorial radius.

The basic range equation for a reflected electromagnetic signal is taken as a starting point. The factors are the same as in the radar range equation, except that the return signal varies inversely as the square, rather than as the fourth power, of range, since it is assumed that all the generated laser flux is incident on the Moon. Using an average figure for atmospheric absorption, a lunar albedo of 0.1, and an effective telescope area of 5.3 m^2 (actual area of a telescope currently in use), the authors calculate

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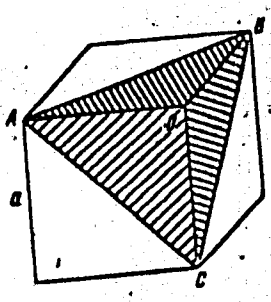
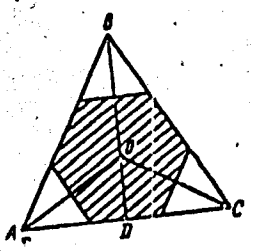
that the relationship between reflected and transmitted energy is

$$W_{refl} \approx 2 \times 10^{-19} W_{tr}.$$

It follows that with the highest sensitivity photodetectors now available, W_{tr} must be at least 150 joules in order to obtain from the Moon a consistently detectible reflection, i.e., one that does not require statistical analysis to be detected. The pulse must be as short as possible to maximize range resolution; however, present laser pulses of the energy level demanded would have durations of the order of milliseconds, which means a range uncertainty of several hundred kilometers. If Q-switching is used to shorten pulse time, there is an intolerable loss in power amplitude. The conclusion is that only when more powerful short-pulse lasers are developed can there be a significant refinement in lunar ranging measurements.

Factors which degrade the laser technique are also discussed. One of these is the unavoidable divergence of the beam in the atmosphere, estimated at 2" to 3", which would give a lunar spot of some 3.5–5 km across. Contour irregularities within the illuminated area can add to the range uncertainty in the return signal, in the form of range "smear." Owing to the Moon's curvature, a similar effect occurs which increases as a function of





Orientation of the reflector would be critical. If the plane of the aperture is not nearly normal to the laser beam, a severe loss in return signal results; for example, a 15° offset would mean a signal loss of approximately 30% (Initial acquisition of the reflector is not discussed). Constraints on reflector geometry are also quite severe, if diffraction losses are to be minimized. For a reflector with $a = 14$ cm, it is estimated that the angular tolerance between adjoining planes should be held within 0.1"; with such tight tolerances, temperature extremes and mechanical stresses could be

critical factors in reflector performance. Under reasonably good conditions, however, it is calculated that a reflector with $\beta = 40$ would return an adequate detectible signal to Earth from a Q-switched ruby laser of 4 to 5 joules output.

The possibility of confusing a genuine signal with noise or surface rather than reflector return can be minimized by using multiple detection and correlating the results. In fact, if three photomultipliers are used simultaneously, the experiment could be performed in daylight, with a low probability of error.

The authors conclude by giving the procedures for calculating mean lunar orbital radius (mean distance between Earth and Moon mass centers), radius of the lunar disk, Earth equatorial radius, and Earth-Moon parallax constant. All of these are obtainable from knowledge of an arbitrary line-of-sight distance from the Earth to the Moon, measured as described above. The calculations show that, with the improved ranging method, parameters such as the Moon's orbital radius and disk radius could be determined to accuracies of several hundreds of meters, a great improvement over the present accuracy of several kilometers. Unfortunately, these accuracy figures do not seem to be tied to any tolerance on the range measurement.

/FSB: v. 2, no. 9/ Orig. art. has: 33 formulas, 2 figures and 1 table.
Card 5/5 SUB CODE: 03,20 / SUBM DATE: 26May65 / ORIG REF: 009 / OTH REF: 003

KOKURIN, V.

Innovators in the textile industry. NTO 5 no.2:39-42 F '63. (MIRA 16:3)

1. Zamestitel' predsedatelya oblastnogo pravleniya Nauchno-tekhnicheskogo obshchestva legkoy promyshlennosti.
(Ivanovo Province—Textile industry—Technological innovations)

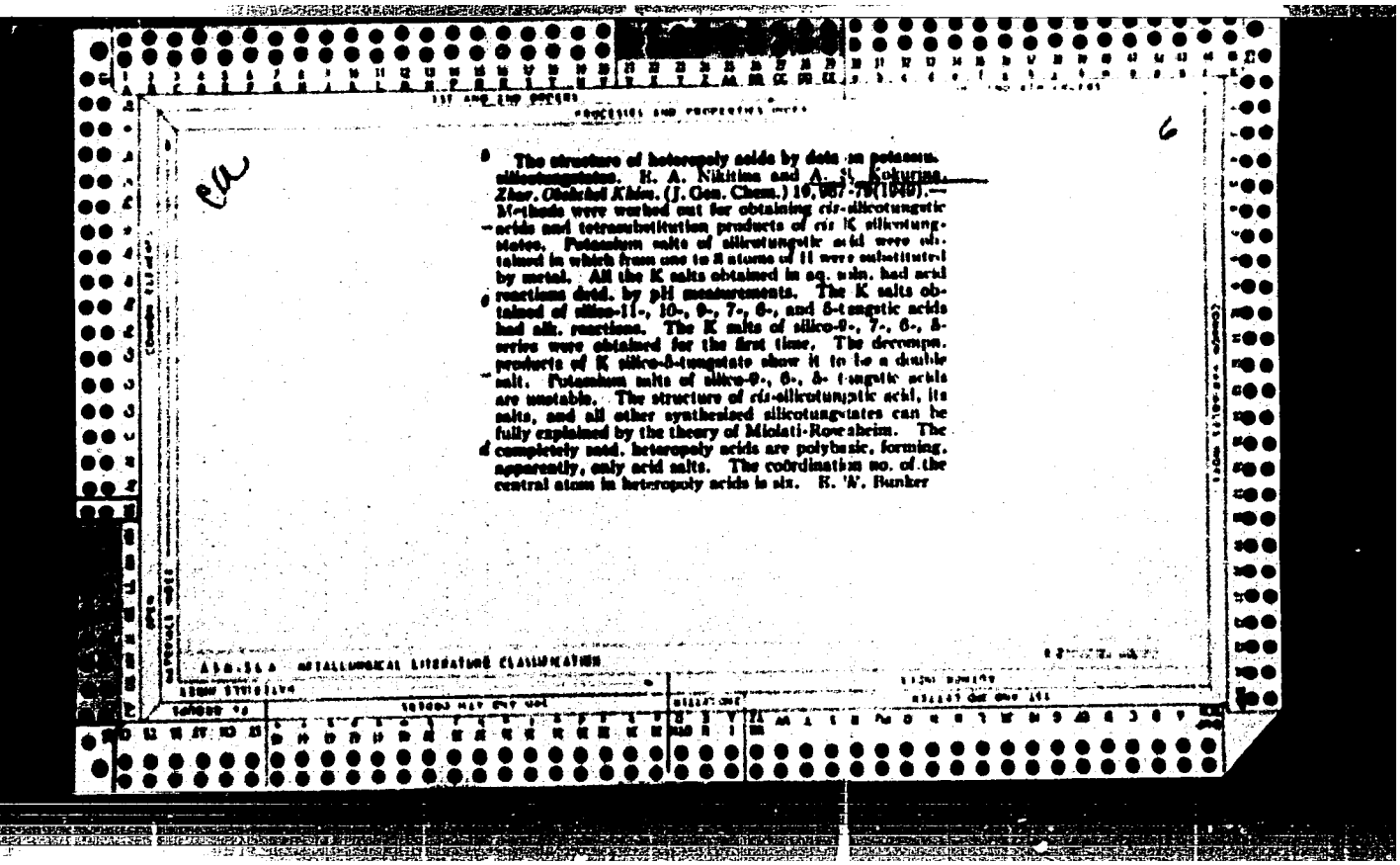
TARASOV, Yu.V.; BABAYEVA, S.T.; KOKURINA, A.B.

Semiautomatic instrument for titration with Fischer's reagent.
Lakokras.mat. i ikh prim. no.2:72-74 '61. (MIRA 14:4)
(Titration)

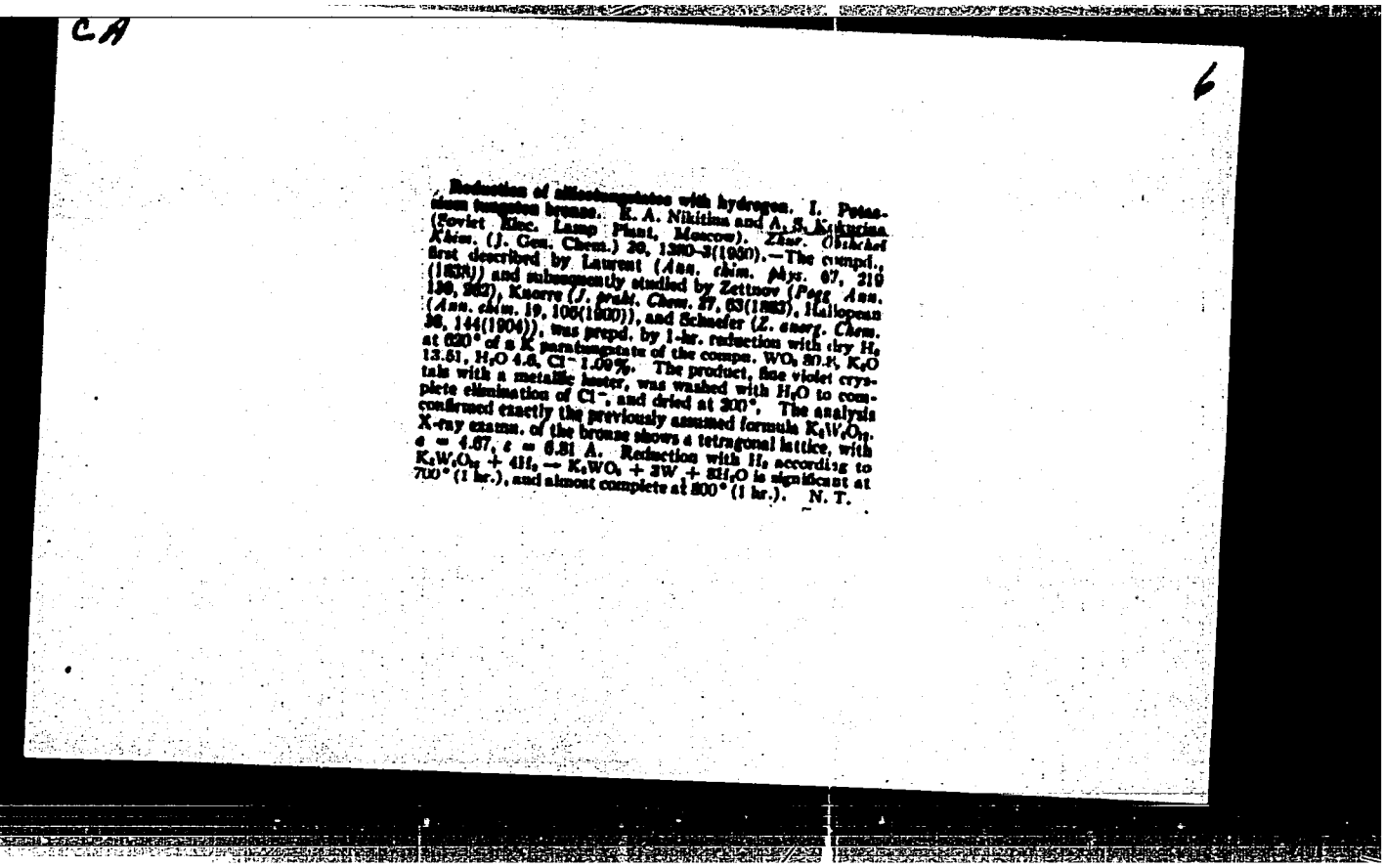
KOKURINA, A. S.

NIKITINA, Ye. A. and KOKURINA, A. S. - "On the study of the structure of heteropoly acids in connection with the investigation of potassium silicotungstates", (Report), Soobshch. o nauch. rabotakh chlenov Vsesoyuz. khim. o-va im. Mendeleyeva, 1949, Issue 2, p. 4-5.

SO: U-4630, 16 Sept. '53, (Letopis 'Zhurnal 'nykh Statey, No. 23, 1949).



The structure of heteropoly acids by data on potassium silicotungstates. H. A. Nikitina and A. S. Kokurina. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 19, 767-79 (1949).—Methods were worked out for obtaining *cis*-silicotungstic acids and tetrasubstitution products of *cis* K silicotungstates. Potassium salts of silicotungstic acid were obtained in which from one to 3 atoms of H were substituted by metal. All the K salts obtained in aq. soln. had acid reactions detd. by pH measurements. The K salts obtained of silico-11-, 10-, 9-, 7-, 6-, and 5-tungstic acids had alk. reactions. The K salts of silico-9-, 7-, 6-, 5-series were obtained for the first time. The decompn. products of K silico-5-tungstate show it to be a double salt. Potassium salts of silico-9-, 6-, 5- tungstic acids are unstable. The structure of *cis*-silicotungstic acid, its salts, and all other synthesized silicotungstates can be fully explained by the theory of Miolati-Rosenheim. The completely neut. heteropoly acids are polybasic, forming, apparently, only acid salts. The coordination no. of the central atom in heteropoly acids is six. E. W. Bunker



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Reduction of alkalitungstates with hydrogen. I. Potassium tungsten bronze. K. A. Nikitina and A. S. Kalugina (Soviet Elec. Lamp Plant, Moscow). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 1380–3(1950).—The compd., first described by Laurent (*Ann. chim. phys.* 67, 219 (1838)) and subsequently studied by Zettnow (*Pogg. Ann.* 138, 562), Knorre (*J. prakt. Chem.* 27, 63(1883)), Hallopeau (*Ann. chim.* [8], 1, 106(1900)), and Schaefer (*Z. anorg. Chem.* 38, 144(1904)), was prepd. by 1-hr. reduction with dry H_2 at 620° of a K paratungstate of the compn. WO_3 80.8, K_2O 13.81, H_2O 4.6, Cl^- 1.09%. The product, fine violet crystals with a metallic luster, was washed with H_2O to complete elimination of Cl^-, and dried at 300°. The analysis confirmed exactly the previously assumed formula $K_2W_4O_{13}$. X-ray examn. of the bronze shows a tetragonal lattice, with $a = 4.67$, $c = 6.81$ A. Reduction with H_2 according to $K_2W_4O_{13} + 4H_2 \rightarrow K_2WO_4 + 3W + 4H_2O$ is significant at 700° (1 hr.), and almost complete at 800° (1 hr.). N. T.

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The reduction of silicotungstates with hydrogen. I. Potassium tungsten bronze. R. A. Nikitina and A. K. Kuzina (Moscow Electrolamp Factory). *J. Gen. Chem. U.S.S.R.* 20, 1437–40(1950)(Engl. translation). See *C.A.* 45, 1944*d*.

R. M. S.

USSR/Chemistry - Wolfram Jul 51

"Reduction of Silicowolframates With Hydrogen. II. Reduction of Cis-Silicowolframic Acid and Its Potassium Salts," Ye. A. Nikitina, A. S. Kokurina, Lab of Moscow Elec Lamp Factory

"Zhur Obshch Khim" Vol XXI, No 7, pp 1181-1197

Reduction of cis-silicowolframic acid and its 8 K salts with H_2 proceeds 1st by dehydration of 1-, 2-, and 3-substituted salts, then reduction to metallic W. One product of reduction of 4- and higher-substituted K salts at 500° C is violet K bronze. Found 600° optimum temp for formation of metallic K bronze. Discusses mechanisms.

191T15

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188T10

USSR/Chemistry - Wolfram Compounds Aug 51

"Reduction of Silicowolframates With Hydrogen. III. Reduction of Unsaturated Potassium Silicowolframates," Ye. A. Nikitina, A. S. Kokurina, Lab of Moscow Elec Lamp Factory

"Zhur Obshch Khim" Vol XXI, No 8, pp 1395-1405

Solid solns of 11th and 12th order unsatd K silicowolframates form max amt of bronzes when reduced with H_2 at 600°C; at 700° bronze is partially reduced to metallic W. K silicowolframates of 5th and 6th order form bronzes only at 600°, no traces being observed at 500 or 700°. Ability to obtain bronzes from K silicowolframates be-

188T10

USSR/Chemistry - Wolfram Compounds (Contd) Aug 51

tween 12th and 5th orders supports general systematization of heteropolyacids based on coordination studies.

188T10

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Reduction of silicotungstates with hydrogen. IV. Sodium bronze and reduction of sodium silicotungstate. E. A. Nikitina and A. B. Kokurina. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 1940-9(1951); *cf. C.A.* 45, 1894*d*.—Reduction of Na paratungstate (WO_3 80.04, Na_2O 9.70, H_2O 10.96%) with H_2 gave a golden Na bronze of the compn. Na_2O 11.79, W 72.85% (calcd. for $Na_2W_4O_{13}$, 12.32 and 73.16%). X-ray analysis showed a cubic lattice with a = 3.87 A. Further reduction of this bronze with H_2 at 700, 780, and 900°, increased the amt. of leachable alkali from an initial 0.02, to 3.06, 9.78, and 10.95%, resp. (at const. total Na_2O content, 11.79%). A coarse-cryst. Na silicotungstate was prepd., of the compn. WO_3 86.94, SiO_2 1.85, Na_2O 3.98, H_2O 7.01, Cl 0.18%, or, recalcd. for an anhyd. and impurity-free salt, WO_3 93.87, SiO_2 2.01, Na_2O 4.12, i.e. practically $2Na_2O.SiO_2.12WO_3$. Its reduction with H_2 gave, along with an increase of leachable Na_2O, increased amts. of a golden bronze, confirmed by x-ray examn.; the amts. of leachable Na_2O, after reduction at 500, 600, 700, and 900°, were, resp., 3.70, 1.88, 2.26, and 3.34%. At 500°, after complete dehydration of the salt, the heteropolyanion decomposes, and the lattice begins to undergo reconstruction to a bronze lattice. The bronze formation is most intense at 600°. Decompn. of the bronze begins at 700°. Silicon is found to a large extent in the leached-out alkali, probably in the form of Na_2SiO_3. The reduction of the silicotungstate can thus be represented schematically by $Na_8[Si(W_3O_{10})_4] + 3H_2 = 3Na_2W_4O_{13} + Na_2SiO_3 + 3H_2O$. N. Thon

KOKURINA, A.S.

NIKITINA, Ye.A.; KOKURINA, A.S.

Internal structure of heteropolyacids. Izv.Sekt.plat.i blag.met. no.27: 106-126 '52. (MLRA 7:5)

1. Vtoroy Moskovskiy gosudarstvennyy meditsinskiy institut im. I.V. Stalina. (Heteropolyacids) (Silicotungstates)